

**REMARKS**

Claims 1-10 and 16-17 are pending in the application.

Reconsideration and review of the claims on the merits are respectfully requested.

***Summary of Examiner's Interview***

In reviewing the Non-Final Office Action dated January 21, 2005, Applicants' representative noted a discrepancy that needed clarification from the Examiner. Claims 1-10, 16 and 17 are pending in the application, and the Examiner rejected Claims 1-10. However, the Examiner failed to reference dependent Claims 16-17. Thus, Applicants' representative called the Examiner on February 15, 2005, and requested clarification as to whether Claims 16-17 are allowed or rejected.

Applicants representative requested that the Examiner issue a new Office Action, along with restarting the response period, and also requested that the Examiner pay particular attention to the patentability of the specific flame retardant compound, MgO·ZnO·H<sub>2</sub>O, of Claim 17.

Applicants appreciate that the Examiner issued a supplemental Office Action on February 23, 2005, with a restart of the response period.

***Response to Claim Rejections - 35 U.S.C. § 103(a)***

A. Claims 1, 3-10 and 17 are rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over WO 99/47573 in view of Nakae et al. (US 4,353,817), for the reasons given in the Office Action.

While the Examiner recognizes that WO ‘573 lacks a teaching of using hydrated metal compounds as flame retardants, the Examiner asserts that Nakae's invention is related to polymer foams with high flame retardancy, and Nakae assertedly teaches that adding hydrated metal compounds renders the polymer foams highly flame retardant. Further, the Examiner cites Nakae as disclosing that the hydrated metal oxide has a general structural formula  $M_mO_n \cdot xH_2O$ , for example, aluminum hydroxide ( $Al_2O_3 \cdot 3H_2O$  or  $Al(OH)_3$ ), magnesium hydroxide ( $MgO \cdot H_2O$  or  $Mg(OH)_2$ ), etc. (column 7, lines 21-37). Thus, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to incorporate a hydrated metal compound in the thermoplastic foams, as taught by Nakae, motivated by the desire to improve the flame retardancy of the foams made by the methods taught by WO ‘573.

Additionally, in the absence of unexpected results, it is the Examiner's position that composite (mixture) metal hydrides, such as  $MgO \cdot ZnO \cdot H_2O$  as recited in Claim 17, are also obvious in the selection of a flame retardant, because the Examiner asserts that it is *prima facie* obvious to combine two compositions each of which is taught by Nakae to be useful for the same purpose, so as to form a third composition to be used for the very same purpose, motivated by the desire to improve the flame retardancy of the foams of WO ‘573.

Regarding Mr. Yamamoto's Declaration, originally filed October 13, 2004, the Examiner asserts the following two points. First, the Examiner believes that the Declaration appears to contain an error in identifying the metal hydride used in Experiment 4 as  $MgO \cdot NiO \cdot H_2O$  (page 3), instead of  $MgO \cdot ZnO \cdot H_2O$ . Second, the Examiner asserts that Applicants' comparison of the degrees of expansion of thermoplastic foams containing

$\text{Al}_2\text{O}_3 \cdot n\text{H}_2\text{O}$  vs.  $\text{MgO} \cdot \text{ZnO} \cdot \text{H}_2\text{O}$  fails to recognize that it would have assertedly been obvious to one of ordinary skill in the art to use composite (mixture) metal hydrides, such as  $\text{MgO} \cdot \text{ZnO} \cdot \text{H}_2\text{O}$ .

B. Claim 2 is rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over WO 99/47573 (WO '573) in view of Nakae et al., and further in view of Applicants' admitted prior art JP-A-322168, for the reasons given in the Office Action.

C. Claim 16 is rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over WO 99/47573 (WO '573) either individually, or in view of admitted prior art, and further in view of Nakae et al., for the reasons given in the Office Action.

Applicants respectfully traverse the obviousness rejections and provide the following remarks.

Applicants submit that there is a lack of motivation to combine the references, and their combination, in any case, fails to present a *prima facie* case of obviousness. Despite the Examiner's position that it is assertedly *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose in order to form a third composition to be used for the very same purpose, Applicants submit that the Examiner is actually only applying improper hindsight reconstruction, and in any case that the new Declaration evidence of unexpectedly superior results supports the patentability of the present claims and rebuts any *prima facie* case of obviousness which may have been established.

Despite the Examiner's position that the present invention is assertedly *prima facie* obvious, Applicants respectfully submit that the combination of Nakae with WO '573 does not render obvious the present invention. Although the Examiner points out that Nakae discloses examples of hydrated metal oxides, including aluminum hydroxide and magnesium hydroxide, for use in flame retardant compositions, Applicants submit that neither these examples nor any other disclosure in Nakae and WO '573 render obvious the composite metal hydroxide represented by formula (1) in Claim 1, for example, where Q is a metal element belonging to a group selected from Groups IVa, Va, VIa, VIIa, VIII, Ib and IIb of the periodic table. Applicants submit that the Examiner has applied improper hindsight reconstruction based on the Applicants' specification to attempt to render obvious the claimed composite metal hydroxide for use as a flame retardant.

In other words, the Examiner has not given concrete examples to support his underlying statement that "in the absence of unexpected results, it is the Examiner's position that composite (mixture) metal hydrides, such as  $MgO \cdot ZnO \cdot H_2O$ , as recited in claim 17, are also obvious [sic] selection of flame retardant, because it is *prima facie* obvious to combine two compositions each of which is taught by prior art Nakae to be useful for the same purpose, so as to form a third composition to be used for the very same purpose, motivated by the desire to improve the flame retardancy of the foams of WO '573." (see Office Action, pages 4-5). Nakae fails to disclose or teach a hydrated zinc metal oxide (see column 7, lines 21-37). Applicants submit that even if a skilled artisan were to combine Nakae and WO '573, the combination would not result in the claimed invention.

Furthermore, in addition to the reasons for patentability given in the remarks above, the presently filed Rule 132 Declaration evidence of unexpectedly superior results allows for patentability of the present claims. The Examiner takes fault with Mr. Yamamoto's Declaration (filed October 13, 2004), and thus, Applicants submit a new Declaration. Applicants respectfully request entry and consideration of the new Declaration as it sets out clear evidence of unexpectedly superior results in a straightforward manner.

In the old and new Declarations, Applicants point out that the metal hydride used in Experiment 4 is correctly stated as MgO•NiO•H<sub>2</sub>O. However, there was an error in identifying MgO•ZnO•H<sub>2</sub>O for Experiment 4 in the Table of the previous Declaration. The Table in the new Declaration correctly recites that the metal hydride used in Experiment 4 is MgO•NiO•H<sub>2</sub>O.

The Rule 132 Declaration represents that Applicants conducted additional experimentation in order to clarify that the claimed composite metal hydroxide represented by formula (1) in Claim 1 exhibits unexpectedly superior results over the closest prior art metal hydroxide compound. The present invention uses the composite metal hydroxide represented by formula (1) as a flame retardant, thereby obtaining microporous soundproofing materials having unexpectedly superior expansion properties and flame retardancy (see Experiment 4 and Examples 7-9 in the Table in the Rule 132 Declaration).

In comparison, the use of Al<sub>2</sub>O<sub>3</sub>•nH<sub>2</sub>O in Comparison Experiments 1-3, 6MgO•Al<sub>2</sub>O<sub>3</sub>•H<sub>2</sub>O in Comparison Experiment 5, and 3MgCO<sub>3</sub>•Mg(OH)<sub>2</sub>•3H<sub>2</sub>O in Comparison Experiment 6 resulted in low degrees of expansion and unacceptable flame retardancy (see

Table), thereby failing to achieve the unexpectedly superior results of the present invention.

Comparison Experiments 5 and 6 used the hydrated metal compounds taught in Nakae.

Therefore, Applicants submit that the unique effect (unexpectedly high degree of expansion) of the presently claimed invention as evidenced in the results of the Rule 132 Declaration would not be obvious to one skilled in the art from the teachings of Nakae and WO '573.

Thus, the claimed invention is not rendered *prima facie* obvious by the combination of Nakae and WO '573, and the unexpectedly superior results obtained in the presently claimed invention further support patentability of the claimed invention over the cited references.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a).

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

RESPONSE UNDER 37 C.F.R. § 1.111  
U.S. Appln. No.: 09/750,125

Atty. Docket No. Q62454

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

  
John K. Shin  
Registration No. 48,409

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE  
23373  
CUSTOMER NUMBER

Date: August 23, 2005